

# Glucose/Insulin Tolerance Test (4 hr.)

Great Smokies Diagnostic Laboratory<sup>SM</sup>

63 Zillicoa Street  
Asheville, NC 28801-1074

Patient: **SAMPLE  
PATIENT**

Order Number:

Completed:

Age: 59

Received:

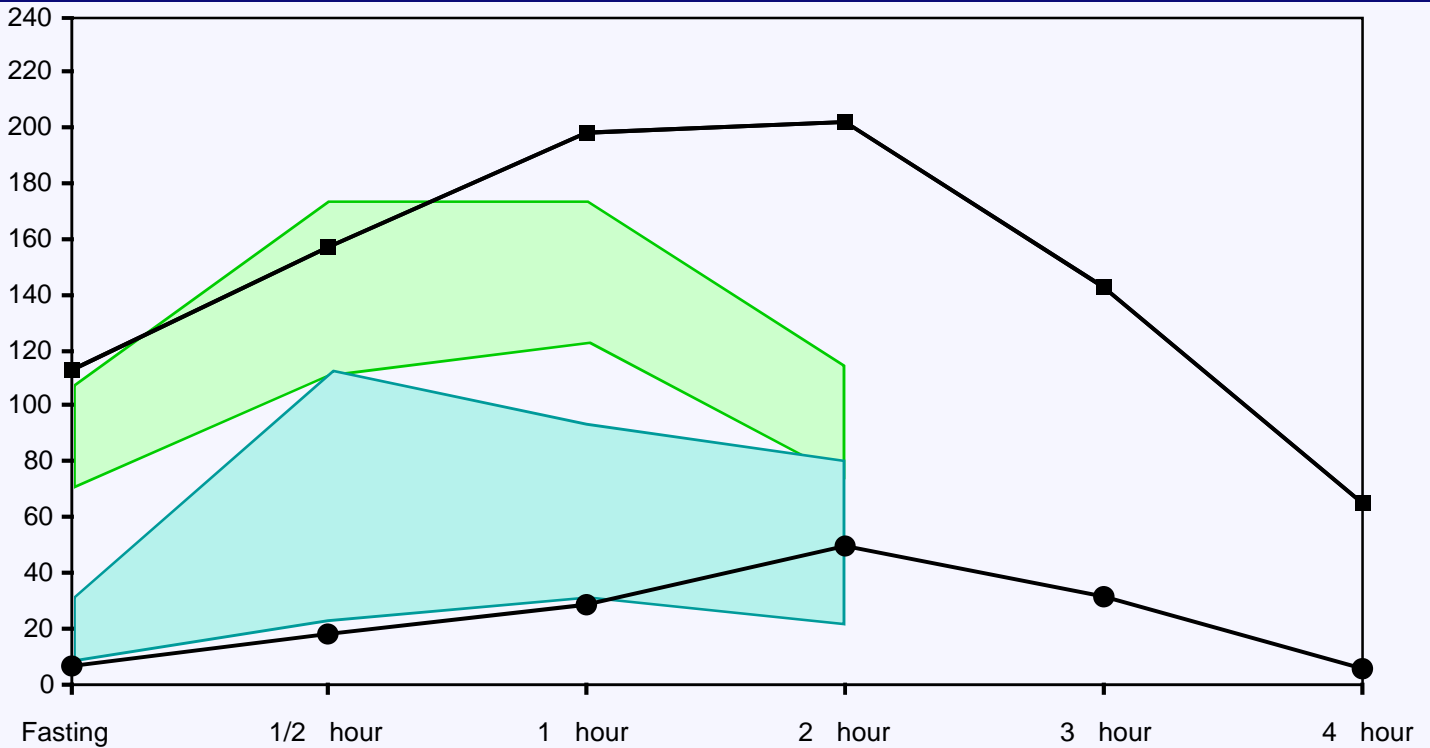
Sex: F

Collected:

MRN:

## SAMPLE REPORT

### Glucose/Insulin Challenge



### Numeric results / Legend

	Fasting	1/2 hour	1 hour	2 hour	3 hour	4 hour
Glucose (mg/dL) ■	113	157	198	202	143	65
Reference Range	70-105	110-170	120-170	70-120	For Research Use Only	
Insulin (uIU/mL) ●	5.99	17.95	28.16	49.13	31.42	5.10
Reference Range	3.00-28.00	20.00-112.00	29.00-88.00	22.00-79.00	For Research Use Only	

## Commentary

Given the rising incidence of diabetes and the metabolic syndrome, laboratory investigation of blood sugar abnormalities is increasingly important in clinical medicine. In addition to early identification of diabetes, the assessment of cardiovascular risk is an important use of glucose and insulin testing. The American Diabetes Association and the World Health Organization have developed different criteria for evaluation of glucose metabolism and the diagnosis of diabetes. We are providing these two standards of diagnosis for the clinician's use in determining glucose-disposal status. In general, it appears as if the ADA criteria will under-diagnose diabetes incidence, especially in high-risk populations such as Native Americans, Chinese, sub-continental Indians and others. The W.H.O. 2-hour post-challenge value is generally a more sensitive gauge of disease processes compared with the A.D.A. criterion. In addition, the IGT/IFG (Impaired Glucose Tolerance / Impaired Fasting Glucose) categories used by the W.H.O. and A.D.A. respectively are clinically significant since these may represent early manifestations of glucose metabolism problems and early pathologic changes. Early identification of individuals with such irregularities, in the fasting as well as post-challenge state, provide the clinician with the best information base upon which to initiate preventive therapies.

Virtually all of the current research in glucose /insulin metabolism looks no further than the 2-hr. post-challenge timeframe. We extend the graph to the full 4 hour time period for the benefit of those practitioners seeking to identify a hypoglycemic state and for those who are interested in observing longer periods of glucose /insulin response to challenge. The values reported in these latter 2 hours are for Research Purposes Only and therefore are not accompanied by commentary.

### For the Patient:

The results of this test evaluate your body's response to carbohydrate (glucose). While glucose in the blood provides fuel for the brain and all other organs, high levels can create problems for the body. Therefore, proper control of glucose levels is an extremely important function. Insulin from your pancreas is the main hormone controlling glucose levels but dietary, hereditary and lifestyle factors are involved as well. The most familiar condition associated with abnormal glucose control is diabetes. This condition may be preceded by certain patterns of glucose levels and insulin release. Through these patterns, it is possible for practitioners to identify individuals at risk for blood sugar problems. By testing and treating impairments in glucose and insulin metabolism, the possibility of suffering from diabetes, certain types of heart disease, obesity and stroke may be minimized.

### For the Clinician:

In this particular case, the peak insulin level occurred after the 1 hour mark. Normally, the insulin peak should occur up to 1 hour following the glucose load. When a clear peak after the 1 hour mark is apparent, this delayed insulin response may be associated with Type II diabetes mellitus, although delayed gastro intestinal absorption may also be responsible. Most patients with this finding also exhibit abnormalities in glucose clearance although a minority of individuals may show this delayed peak and have NO abnormalities of glucose clearance.

The fasting glucose level is somewhat above the reference range, though still below the level at which diabetes may be diagnosed. A.D.A. criteria designate a fasting glucose between 110 -125mg/dl. as indicative of "Impaired Fasting Glucose" (IFG). As development of overt Type II diabetes mellitus is a gradual process occurring over years, this "IFG" pattern may indicate an early stage at which intervention may have significant preventive benefit.

Elevated blood glucose (above 200mg/dl) found at the 2 hour post glucose load is diagnostic for diabetes mellitus according to the W.H.O. and A.D.A. criteria. Early and effective correction of this abnormality may prevent many of the long term sequelae of chronically elevated blood sugar. Monitoring via HgbA1C or other marker of glycosylated protein (AGEs, fructosamine) is recommended to optimize the treatment regimen.